

Accordingly, there is no problem, and the reliability can be improved without receiving the influence of the inorganic filler. That is, there is produced the additional effect that the conductive particles 10a can reduce the value of the connection resistance between the electrode 5 located on the board side and the bump 3 located on the IC chip side when placed between the bump 3 and the board electrode 5 through the direct bonding of the bump 3 to the board electrode 5.

(Ninth Embodiment)

A method and apparatus for mounting an electronic component of, for example, an IC chip on a circuit board and an electronic component unit or module of, for example, a semiconductor device in which the IC chip is mounted on the board by the mounting method, according to a ninth embodiment of the present invention will be described next with reference to Fig. 25 and Fig. 26. Fig. 25 and Fig. 26 are a schematic sectional view of a bonded state produced by the method and apparatus for mounting an electronic component of, for example, an IC chip on a circuit board and a partially enlarged schematic sectional view of an anisotropic conductive film sheet 10 employed in the above case, according to the ninth embodiment. According to this ninth embodiment, the inorganic filler 6f to be mixed with the insulating resin 6m of the anisotropic conductive layer

10 in each of the aforementioned embodiments is provided by inorganic fillers 6f-1 and 6f-2, which have a plurality of different mean particle diameters. As a concrete example, an inorganic filler having a mean particle diameter of 0.5  $\mu\text{m}$  and an inorganic filler having a mean particle diameter of 2 to 4  $\mu\text{m}$  are employed.

According to the ninth embodiment, by mixing the insulating resin 6m with the inorganic fillers 6f-1 and 6f-2, which have the plurality of different mean particle diameters, the amount of the inorganic filler 6f to be mixed with the insulating resin 6m can be increased, and the amount of moisture absorption to the periphery of the inorganic filler can be reduced. This enables the improvement in the moisture resistance and facilitates the film formation (solidification). That is, in terms of percentage by weight, the amount of the inorganic filler per unit volume can be increased when inorganic fillers of different particle diameters are mixed rather than when one type of inorganic filler is employed. This enables the increase in amount of the inorganic filler 6f to be mixed with the anisotropic conductive film sheet 10 or the anisotropic conductive film forming thermosetting adhesive 6b that serves as an encapsulation sheet and enables the reduction in the coefficient of linear expansion of the anisotropic conductive film sheet 10 or the anisotropic

conductive film forming thermosetting adhesive 6b, allowing the operating life to be increased for the improvement of reliability.

(Tenth Embodiment)

5               Next, according to a method and apparatus for mounting an electronic component of, for example, an IC chip on a circuit board and an electronic component unit or module of, for example, a semiconductor device in which the IC chip is mounted on the board by the mounting method,  
10               according to a tenth embodiment of the present invention, in order to further ensure the effect of the ninth embodiment, the mean particle diameter of one inorganic filler 6f-1 of the inorganic fillers 6f-1 and 6f-2, which have the plurality of different mean particle diameters, is  
15               two or more times different from the mean particle diameter of the other inorganic filler 6f-2. As a concrete example, an inorganic filler having a mean particle diameter of 0.5  $\mu\text{m}$  and an inorganic filler having a mean particle diameter of 2 to 4  $\mu\text{m}$  are employed.

20               With this arrangement, the effect of the ninth embodiment can further be improved. That is, by mixing the insulating resin 6m with the inorganic fillers 6f-1 and 6f-2, which have the plurality of different mean particle diameters and in which the mean particle diameter of one  
25               inorganic filler 6f-1 is two or more times different from